

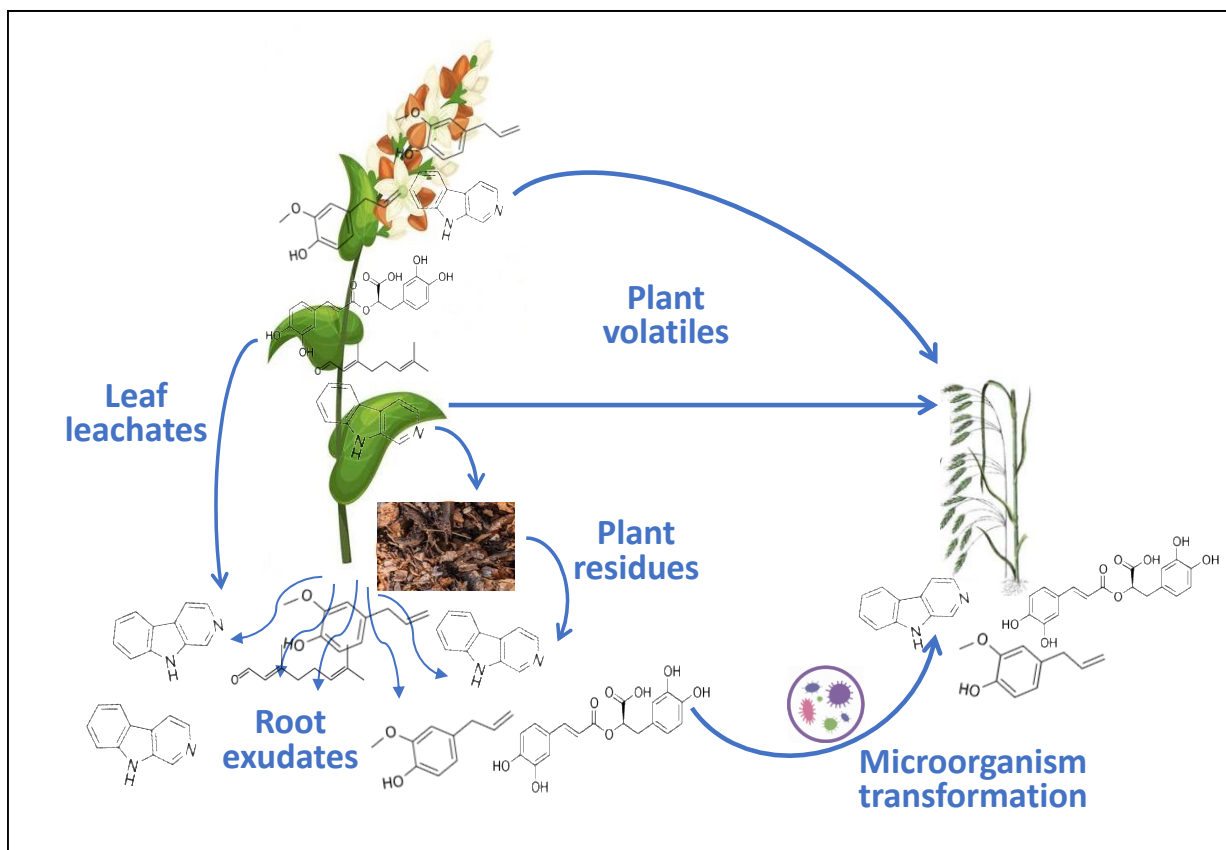


PRACTICE ABSTRACT No. 17

Allelopathy for weed management

PROBLEMS:

- Weed management is a major problem in organic production systems where synthetic herbicides are not permitted.
- Organic agriculture relies heavily on cultural control options for weed control i.e. crop rotation, sowing date, plough based cultivation etc.



SOLUTIONS:

- Plants naturally produce and release to the environment thousands of compounds, which can control the germination and/or growth of other plants. This phenomenon is known as allelopathy and can be found in natural as well as agricultural ecosystems.
- Some crops e.g. wheat, sorghum, rye, buckwheat and oats produce and store a variety of allelopathic substances that can serve as a natural source of weed-controlling compounds. These allelochemicals can be found in living organs or arise from residues after decay. Wheat is one of the crops with the strongest phytotoxic properties, most likely due to the presence of hydroxamic acids and phenolic compounds.
- The allelopathic properties of plants can be used in different ways: living crops releasing or exuding allelochemicals, allelopathic mulching or cover crops, allelopathic interactions in multiple cropping systems and ultimately, the application of allelopathic aqueous extracts as natural herbicides.

PRACTICAL RECOMMENDATIONS:

- Allelopathy seems to work better against single rather than a range of weed species but has clear potential to contribute to sustainable weed control.
- Further research is needed to screen crop cultivars for variation in allelochemical production and release, together with field studies to evaluate the most appropriate application methods (mulching, cover crop, etc.) and crop rotations for sustainable weed management.

FURTHER INFORMATION:

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Jabran K, Mahajan G, Sardana V, Chauhan BS (2015) Allelopathy for weed control in agricultural systems. *Crop Protection* 72: 57-65. <https://doi.org/10.1016/j.cropro.2015.03.004>

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ECOBREED CONSORTIUM



ABOUT ECOBREED:

ECOBREED is a 5-year (2018-2023) project funded by European Union's Horizon 2020 research and innovation programme that will improve the availability of varieties and seed suitable for organic and low-input production. Activities will focus on four crop species i.e. wheat, potato, soybean and common buckwheat, selected for their potential contribution to increasing the competitiveness of the organic sector.

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